

IN THE CLAIMS

Please amend the claims as follows:

- 1-12. (Canceled).
13. (Original) A package comprising:
a die;
a first heat sink;
a thermal interface material disposed between the die and the first heat sink, the thermal interface material including:
a matrix, wherein the matrix exhibits a phase change between about 30° C and about 100° C; and
a distribution of first interstitial heat transfer structures in the matrix, including a size range from about 5 micron to about 25 micron, and wherein the distribution of first interstitial heat transfer structures occupies from about 5 volume percent to about 95 volume percent of the composition; and
wherein the die is separated from the first heat sink by less than or equal to about 30 micron.
14. (Original) The package of claim 13, further including:
a second heat sink disposed above the first heat sink.
15. (Original) The package of claim 13, further including:
a second heat sink disposed above the first heat sink; and
a thermal interface material disposed between the first heat sink and the second heat sink, including:
a second heat sink matrix, wherein the second heat sink matrix exhibits a phase change between about 30° C and about 100° C; and
a distribution of first interstitial heat transfer structures in the second heat sink matrix, including a size range from about 5 micron to about 1,000 micron,

and wherein the distribution of first interstitial heat transfer structures occupies from about 5 volume percent to about 95 volume percent of the composition.

16. (Original) The package of claim 13, wherein the matrix is selected from silicone, an amino epoxy, an acrylate, an olifin resin, a vinyl, an acrylic, a natural rubber, and a synthetic rubber.

17. (Original) The package of claim 13, wherein the matrix is selected from silicone, an amino epoxy, an acrylate, an olifin resin, a vinyl, an acrylic, a natural rubber, and a synthetic rubber, and wherein the wetting agent is present from about 1 to about 25 percent, the matrix is present from about 4 to about 75 percent, and the interstitial heat transfer structures are present from about 5 to about 95 percent.

18. (Original) The package of claim 13, wherein the die includes a bare die.

19. (Original) The package of claim 13, wherein the die includes a bare die in a mobile device.

20-25. (Canceled)

26. (Currently amended) A computing system comprising:

a die;

a first heat sink;

a thermal interface material disposed between the die and the first heat sink, the thermal interface material including:

a matrix, wherein the matrix exhibits a phase change between about 30° C and about 100° C; and

a distribution of first interstitial heat transfer structures in the matrix, including a size range from about 5 micron to about 25 micron, and wherein the distribution of first interstitial heat transfer structures occupies from about 5 volume percent to about 95 volume percent of the composition;

wherein the die is separated from the first heat sink by less than or equal to about 30 micron; and
a data storage system ~~at least one of an input device and an output device~~ coupled to the die.

27. (Original) The computing system of claim 26, wherein the computing system is disposed in one of a notebook computer, a desktop computer, a wireless communicator, a hand-held device, an automobile, a locomotive, an aircraft, a watercraft, and a spacecraft.

28. (Original) The computing system of claim 26, wherein the die is selected from a data storage device, a digital signal processor, a micro-controller, an application specific integrated circuit, and a microprocessor.

29. (Original) The computing system of claim 26, wherein the die includes a bare die.

30. (Original) The computing system of claim 26, wherein the die includes a bare die in a mobile device.

31. (New) The package of claim 13, wherein the die is a bare die.

32. (New) The package of claim 13, wherein the die is a bare die in a mobile device.

33. (New) The package of claim 13, wherein the distribution of first interstitial heat transfer structures is selected from aluminum, aluminum alloys, copper, copper alloys, silver, silver alloys, tin, tin alloys, dielectrics, graphite, carbon fibers and combinations thereof.

34. (New) The package of claim 13, further including a distribution of second interstitial heat transfer structures, wherein the distribution of second interstitial heat transfer structures includes a low melting-point metal.

35. (New) The package of claim 13, further including a distribution of second interstitial heat transfer structures, wherein the distribution of second interstitial heat transfer structures is present in a greater weight concentration than the distribution of first interstitial heat transfer structures.

36. (New) An article comprising:
a die;
a first heat sink; and
a thermal interface material disposed between the die and fir first heat sink, the thermal interface material including:

a matrix including a first surface and a second surface that is parallel planar to the first surface, wherein the matrix exhibits a phase change between about 30° C and about 100° C, and wherein the first surface is separated from the second surface by less than or equal to about 30 micron; and

a distribution of contiguous first interstitial heat transfer structures exhibiting a contiguous interstitial heat transfer structure path in the matrix, including a size range from about 5 micron to about 25 micron, and wherein the distribution of first interstitial heat transfer structures occuppies from about 5 volume percent to about 95 volume percent of the composition.

37. (New) The article of claim 36, wherein the contiguous first interstitial heat transfer structure path originates at the first surface and terminates at the second surface, and wherein the contiguous interstitial heat transfer structure path includes four or fewer interstitial heat transfer structures.

38. (New) The article of claim 36, further including:
a distribution of second interstitial heat transfer structures, wherein a portion of the distribution of second interstitial heat transfers includes one interface exposed at least one of the first surface and the second surface, and one interface exposed to at least one of the distribution of first interstitial heat transfer structures.

39. (New) The article of claim 36, further including:

a distribution of second interstitial heat transfer structures, wherein a portion of the distribution of second interstitial heat transfer structures includes one interface exposed at least one of the first surface and the second surface, and one interface exposed to at least one of the distribution of first interstitial heat transfer structures, and wherein the distribution of second interstitial heat transfer structures is present in a greater weight concentration than the distribution of first interstitial heat transfer structures.

40. (New) The article of claim 36, wherein the matrix is selected from silicone, an amino epoxy, an acrylate, an olifin resin, a vinyl, an acrylic, a natural rubber, and a synthetic rubber.

41. (New) The article of claim 36, wherein the matrix is selected from silicone, an amino epoxy, an acrylate, an olifin resin, a vinyl, an acrylic, a natural rubber, and a synthetic rubber, and wherein the wetting agent is present from about 1 to about 25 percent, the matrix is present from about 4 to about 75 percent, and the interstitial heat transfer structures are present from about 5 to about 95 percent.

42. (New) The computing system of claim 26, wherein the die is a bare die.

43. (New) The computing system of claim 26, wherein the die is a bare die in a mobile device.

44. (New) The computing system of claim 26, wherein the distribution of first interstitial heat transfer structures is selected from aluminum, aluminum alloys, copper, copper alloys, silver, silver alloys, tin, tin alloys, dielectrics, graphite, carbon fibers and combinations thereof.

45. (New) The computing system of claim 26, further including a distribution of second interstitial heat transfer structures, wherein the distribution of second interstitial heat transfer structures includes a low melting-point metal.

46. (New) The computing system of claim 26, further including a distribution of second interstitial heat transfer structures, wherein the distribution of second interstitial heat transfer structures is present in a greater weight concentration than the distribution of first interstitial heat transfer structures.

47. (New) The computing system of claim 26, wherein the matrix is selected from silicone, an amino epoxy, an acrylate, an olifin resin, a vinyl, an acrylic, a natural rubber, and a synthetic rubber.

48. (New) The computing system of claim 26, wherein the matrix is selected from silicone, an amino epoxy, an acrylate, an olifin resin, a vinyl, an acrylic, a natural rubber, and a synthetic rubber, and wherein the wetting agent is present from about 1 to about 25 percent, the matrix is present from about 4 to about 75 percent, and the interstitial heat transfer structures are present from about 5 to about 95 percent.